KNOWLEDGE MANAGEMENT : A SYSTEM DYNAMICS PERSPECTIVE

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ABSTRACT

In the present day market scenario of intense competition, organizations need to know what they know and be able to leverage on it's knowledge base to gain competitive advantage. In this knowledge era, organisations can create and sustain competitive advantage through initiation of appropriate knowledge management processes. The organisations that can leverage technology to exploit the data will realize the benefits by creating a competitive advantage for itselfes. The competitive advantage could be in the form of identifying trends, unusual patterns, and hidden relationships. The recent emphasis on knowledge management arises out of the need for organizations to manage resources more effectively in a hyper-competitive, global economy.

1. INTRODUCTION

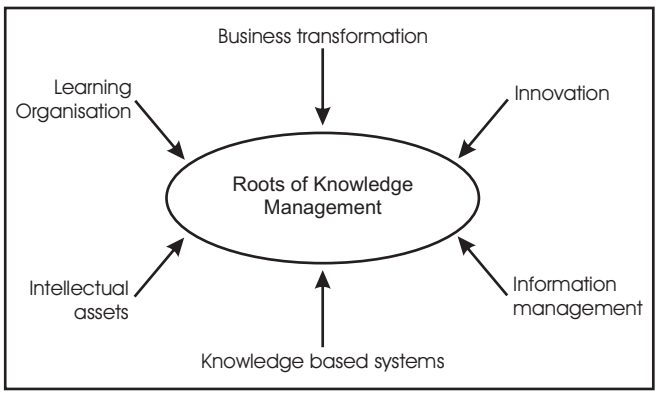
Knowledge can be defined as a 'fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of the owners of knowledge. In organizations, it often becomes embedded not only in documents or repositories, but also in organizational routines, processes, practices and norms'. There are different categories of knowledge. First, knowledge is referred to what is gained through the understanding of concepts and frameworks, generally referred to as 'knowing why'. Another classification of knowledge, 'capacity for action', refers to an understanding of the facts and procedures required for making things happen. Knowledge also refers to the codification of 'factual knowledge based on prior experience', which is generally tacit knowledge and is termed as 'knowing that'. The next usage of knowledge refers to codification of 'factual knowledge which is acquired knowledge' and this could be tacit or explicit. This term is also used while referring to 'social knowledge of networks' indicating the persons known. This, in general terms, is referred to as 'knowing who'. Knowledge also refers to the cultural knowledge facilitating communication, which in common terms is termed as 'knowledge of meaning'.

2. Why knowledge management

The field of knowledge management has gained currency in recent times due to a wide variety of reasons. Some of them are

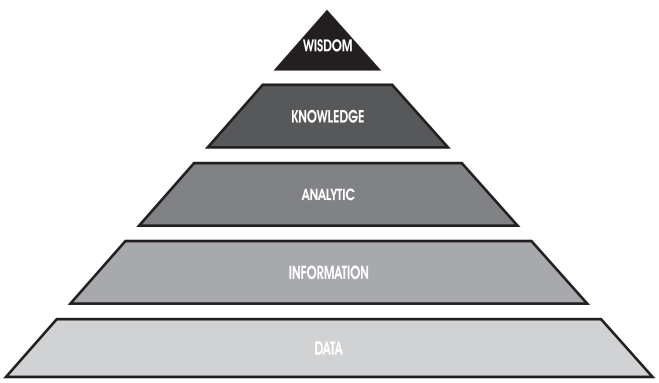
- Organisations are forced to compete on the basis of knowledge
- Market place is increasingly competitive
- Reduction in staffing create a need to replace informal knowledge with formal methods
- Reduction in work force due to competitive pressure
- Need for life-long learning is an inescapable reality
- Increasing dominance of knowledge as a basis for organisational effectiveness
- The failure of financial models to represent the dynamics of knowledge
- The failure of information technology by itself to achieve substantial benefits for organisations
- The diffusion of global capabilities causing developed countries to become service-based economies depending on labor from developing countries
- The unintended consequences of universal information access.
- The importance attached to this subject in management schools.

3. Roots of knowledge management



4. Hierarchy of Business Intelligence

Realising the benefits from how raw data goes through a number of stages as depicted in the following figure.



5. Definition of KM

'Knowledge management is concerned with the exploitation and development of the knowledge assets of an organization with a view to furthering the organization's objectives. The knowledge to be managed includes explicit, documented knowledge and tacit, subjective knowledge. Management of this knowledge entails all the processes associated with the identification, sharing and creation of knowledge. This requires systems for the creation and maintenance of knowledge repositories, and to cultivate and facilitate the sharing of knowledge and organization learning. Organizations that succeed in knowledge management are likely to view knowledge as an asset and to develop organizational norms and values, which support the creation, and sharing of knowledge.'

6. Categories of Knowledge Management models

a. Nonaka and Takeuchi

These types of models categorise knowledge into discrete elements. Nonaka and Takeuchi look at the process of knowledge management as a knowledge creation process.

		To Tacit	Explicit
From	Tacit	Socialisation	Externalization
	Explicit	Internalisation	Combination

The transforming processes are assumed to be socialization, externalization, internalization and normalization.

b. Hedlund and Nonaka knowledge management model

	Individual	Group	Organisation	Interorganisational domain
Articulated knowledge	Knowing calculus	QC documented analysis of its performance	Organisation chart	Supplier's patents
Tacit Knowledge	Cross -cultural negotiation Skills	Team coordination in complex world	Corporate culture	Customer's attitudes to products and expectations

This model assumes four different carriers of knowledge in the process of knowledge creation. This is an improvement over the previous model in that it identifies the carriers of knowledge, but assumes that the carriers can be seggregated and identified.

c. Boisot model

Codified - knowledge that can be readily prepared for transmission.

Codified	Proprietary knowledge	Public knowledge
Uncodified	Personal knowledge	Common sense

Uncodified - knowledge that cannot be easily prepared for transmission

Diffused - knowledge that is easily shared

Undiffused - knowledge that cannot be easily shared

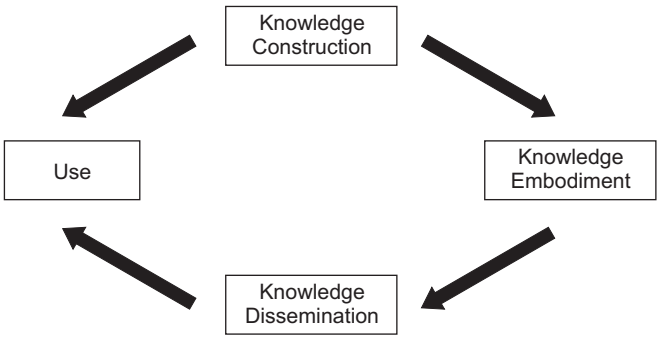
Critiques of this model point to the limitation in that codified and uncodified are two distinct and discrete categories of knowledge, which is generally not as distinct as portrayed. Diffused knowledge is rather general and is not clear if it includes incorporating knowledge within the organisation, as well as spreading it.

7. Knowledge Management Processes

Following are the sample list of knowledge management processes

- Generating new knowledge
- Accessing knowledge from external sources
- Representing knowledge in documents, databases, software etc.
- Embedding knowledge in processes, products and services
- Transferring existing knowledge around an organization
- Using accessible knowledge in decision making
- Facilitating knowledge growth through culture and incentives
- Measuring the value of knowledge assets and the impact of knowledge management

8. Knowledge creation model -demerest

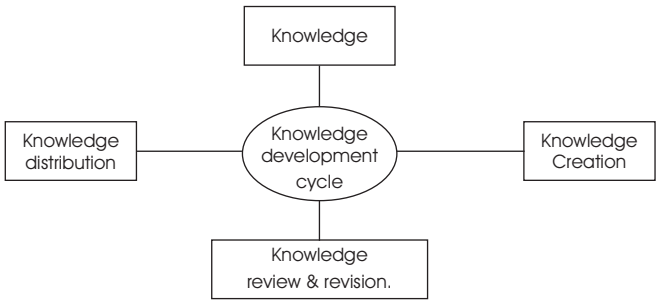


9. Principles of knowledge management

- Knowledge management is expensive
- Effective management of knowledge requires hybrid solutions of people and technology
- Knowledge management is highly political
- Knowledge management requires knowledge managers
- Knowledge management benefits more from maps than models, more from markets than from hierarchies
- Sharing and using knowledge are often unnatural acts
- Knowledge management means improving knowledge work processes
- Knowledge access is only the beginning
- Knowledge management process never ends
- Knowledge management requires a knowledge contract

10. Knowledge Development Cycle

The knowledge development cycle is defined as the knowledge management process in an organization, as a cyclic process from knowledge creation to knowledge review and revision.



The knowledge creation process involves the creation of new knowledge in the organization. This also includes activities like research and development, consulting, education etc. The knowledge adoption process involves the adoption of created knowledge and adapting the knowledge. The knowledge distribution and knowledge review and revision process involves the conversion of converting the individual knowledge to organizational knowledge.

11. The Application of Knowledge Management

Most knowledge management issues are as applicable to the management of public sector organizations as to the management of private sector enterprises. In fact, it would seem that traditional knowledge-oriented organizations, such as universities, research and development laboratories and public sector science funding and directing organizations, should play a lead role in developing and furthering the theory, practice, and tools to promote better knowledge management.

- Mapping and assessing various knowledge domains (recognizing that these domain often span the traditional disciplines) to determine where knowledge gaps/needs exist as input to establishing research agendas and funding priorities
- Having the knowledge to effectively inform the strategic direction of scientific research advancements toward solving our most critical health, security, environmental, and social problems
- Promoting collaboration among various science funding and directing organizations (primarily but not exclusively those in the public sector) to achieve greater efficiency, effectiveness, and synergy among these organizations as well as among science performing organizations
- Enabling the capture and sharing of knowledge across science organizations,particularly among public sector science organizations
- Balancing the goals of sharing knowledge among public science organizations and demonstrating organizational performance accountability by claiming credit for new scientific developments
- Promoting partnerships between the public sector research and development laboratories, private sector research and development efforts, and universities to enhance knowledge creation and share the cost/risk of major science initiatives
- Promoting international scientific partnerships and global scientific advancement;
- Promoting the utilization and commercialization of publicly funded science

The biggest knowledge management challenges for public sector science executing organizations might include:

- Enhancing their capacity to identify and become leaders in cutting-edge science
- Creating knowledge-rich environments and knowledge-rich interactions to promote the conduct of science
- Developing an effective science portfolio and an effective pipeline of projects, recognizing the tradeoffs between overlap and efficiency
- Facilitating the proprietary capture of new science developments/discoveries as intellectual property
- Determining how to develop knowledge systems that

adequately capture the state of knowledge in various scientific domains and can be easily utilized

- Determining how to make links across diverse knowledge systems
- Balancing the goals of generating intellectual property and sharing knowledge freely to advance rapid and effective scientific development

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